User's Manual

HPA4

4-Channel HEADPHONE AMPLIFIER

ALTO®

www.altoproaudio.com

Version 2.3 September 2005

— English —

SAFETY RELATED SYMBOLS

This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

⏚ Protective Ground Terminal

~ AC mains (Alternating Current)

Hazardous Live Terminal

ON: Denotes the product is turned on.

OFF: Denotes the product is turned off.

WARNING

Describes precautions that should be observed to prevent the possibility of death or injury to the user.

CAUTION

Describes precautions that should be observed to prevent damage to the product.

Disposing of this product should not be placed in municipal waste and should be Separate collection.

WARNING

- **Power Supply**

  Ensure that the mains source voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user.

  Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

- **External Connection**

  Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

- **Do Not Remove Any Covers**

  Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed.

  Covers should be removed by qualified service personnel only.
  No user serviceable parts inside.

- **Fuse**

  To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

- **Protective Ground**

  Before turning the product ON, make sure that it is connected to Ground. This is to prevent the risk of electric shock.

  Never cut internal or external Ground wires. Likewise, never remove Ground wiring from the Protective Ground Terminal.

- **Operating Conditions**

  Always install in accordance with the manufacturer's instructions.

  To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture. Do not use this product when in close proximity to water.

  Do not install this product near any direct heat source.

  Do not block areas of ventilation. Failure to do so could result in fire.

  Keep product away from naked flames.

IMPORTANT SAFETY INSTRUCTIONS

Read these instructions

Follow all instructions

Keep these instructions. Do not discard.

Heed all warnings.

Only use attachments/accessories specified by the manufacturer.

- **Power Cord and Plug**

  Do not tamper with the power cord or plug. These are designed for your safety.

  Do not remove Ground connections!

  If the plug does not fit your AC outlet seek advice from a qualified electrician.

  Protect the power cord and plug from any physical stress to avoid risk of electric shock.

  Do not place heavy objects on the power cord. This could cause electric shock or fire.

- **Cleaning**

  When required, either blow off dust from the product or use a dry cloth.

  Do not use any solvents such as Benzol or Alcohol. For safety, keep product clean and free from dust.

- **Servicing**

  Refer all servicing to qualified service personnel only.

  Do not perform any servicing other than those instructions contained within the User's Manual.

Preface

Dear Customer:

Thanks for choosing ▲LTO HPA4 4-Channel Headphone Amplifier and thanks for choosing the one of results of ▲LTO AUDIO TEAM job and researches.

For our ▲LTO AUDIO TEAM, music and sound are more than a job...are first of all passion and let us say...our obsession!

We have been designing professional audio products for a long time in cooperation with some of the major brands in the world in the audio field.

The ▲LTO line presents unparalleled analogue and digital products made by Musicians for Musicians in our R&D Centres in Italy, Netherlands, United Kingdom and Taiwan. The core of our digital audio products is a sophisticated DSP (Digital sound processor) and a large range of state of the art algorithms which have been developed by our Software Team for the last 7 years.

Because we are convinced you are the most important member of ▲LTO AUDIO TEAM and the one confirming the quality of our job, we'd like to share with you our work and our dreams, pay attention to your suggestions and your comments.

Following this idea we create our products and we will create the new ones! From our side, we guarantee you and we will guarantee you also in future the best quality, the best fruits of our continuous researches and the best prices.

Our ▲LTO HPA4 4-Channel Headphone Amplifier is the result of many hours of listening and tests involving common people, area experts, musicians and technicians.
The result of this effort is a versatile Headphone Amplifier featuring 4 separated channels, each channel provides 3 push-button switches, 4 knob controls, 2 phone jacks and 8 digit output level meters. The common main section contains 1knob control, 1 jack and 8 digit input level meters.

Nothing else to add, but herewith we would like to thank all the people that made the ▲LTO HPA4 4-Channel Headphone Amplifier a reality available to you, and thank our designers and all the ▲LTO staff, who make possible the realization of products containing our idea of music and sound and there to support you, our customers, in the best way, and are conscious that you are our best richness.

Thank you very much.

▲LTO AUDIO TEAM

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1. INTRODUCTION

Thank you very much for expressing your confidence in ▲LTO products by purchasing our HPA4 4-Channel Headphone Amplifier. With the HPA4 you have acquired an extremely musical and flexible 4-Channel Headphone Amplifier. Featuring four stereo headphone amplifiers, the ▲LTO HPA4 4-Channel Headphone Amplifier performs a number of necessary tasks, not all of which are headphone related.

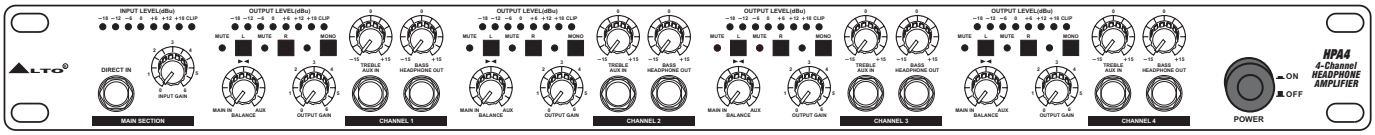
The HPA4 4-Channel Headphone Amplifier provides Main Inputs on the rear panel and Direct In Input on the front panel to drive any or all of the 4 stereo headphone amplifiers, when using the Direct In Input, the Main Inputs signal will be interrupted automatically, the Main Outputs on the rear panel can be used to interlink any number of HPA4s for expanding. The AUX In input on each channel is used to add an additional input signal to the master signal, with the corresponding Balanced Control to determine the mix ratio between the two signals.

In parallel with the Headphone Outputs on the rear panel, the Headphone Output on the front panel is also used to output the signal of the individual channel.

2. FEATURE LIST

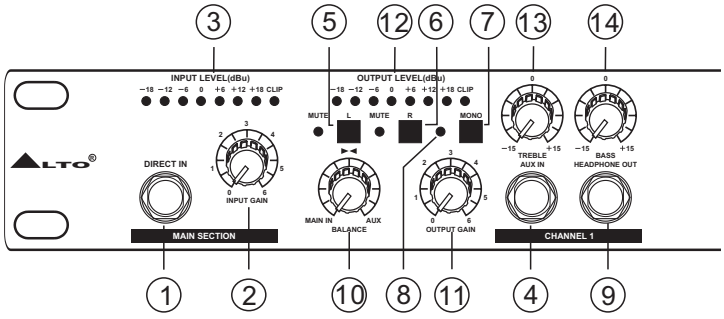
- Signal Rack Unit
- 4 individual channels
- Common input gain control, and individual output gain control
- Up to 3 headphone outputs per channel
- Direct In and Headphone Output on the front panel for easy operation, esp. used in the rack mounting application
- Input and Output Level Meter
- Balance Control to mix up the Main In and the Aux In signal
- Main Outputs for chaining further HPA4 headphone amplifiers
- Maximum audio quality even at high volume levels
- Exceptionally rugged construction ensures long life and durability
- Universal and professional headphone amplification system for studio and stage application
- Manufactured under QS9000 certified quality system

3. CONTROL ELEMENTS



Excluding 1 knob control, 1 jack and 8 LEDs for the common main section, the ▲LTO HPA4 4-Channel Headphone Amplifier also contains 3 Push-button switches, 2 knob controls, 2 phone jacks and 4 LEDs for each individual channel.

3.1 The Front Panel



1. Direct In Input

The Direct In Input is used to feed the external program sources into the main signal path, comparing to the Main Input on the rear panel, this input presents the priority character.

2. Input Gain Control

This control sets the input signal level coming from Main In.

3. Input Level Meter

This meter tells you the level of the main input signal coming from Main/Direct In, and the range goes from -18dBu to +18dBu.

4. Aux In Input

The Aux In Input is used to feed the further input signal, which can be mixed with the Main/ Direct In signal via Balanced Control.

5. L Mute Switch

The Left input signal will be muted if this switch is activated.

6. R Mute Switch

The Right input signal will be muted if this switch is activated.

7. Mode Switch

This push-button switches the operational mode between Mono and Stereo. Press this button for Mono application, and the Mono LED (8) lights up.

8. Mono LED

This LED informs you the current operational mode. Press the Mode Switch (7) for Mono application, this LED lights up.

9. Headphone Out Output

In parallel with the Headphone Output on the rear panel, this 1/4" TRS phone jack is also used to output the signal of the individual channel.

10. Balanced Control

This control is used to set the proportion between the signal coming from Aux In Input and Main/Direct In Input.

11. Output Gain Control

This control is used to adjust the output level of the individual channel.

12. Output Level Meter

This 8-digit meter tells you the level of the output signal, and the range goes from -18dBu to +18dBu. In case of the Clip LED lights up, please turn down the Input Gain Control or/and the individual Output Gain Control to avoid any distortion.

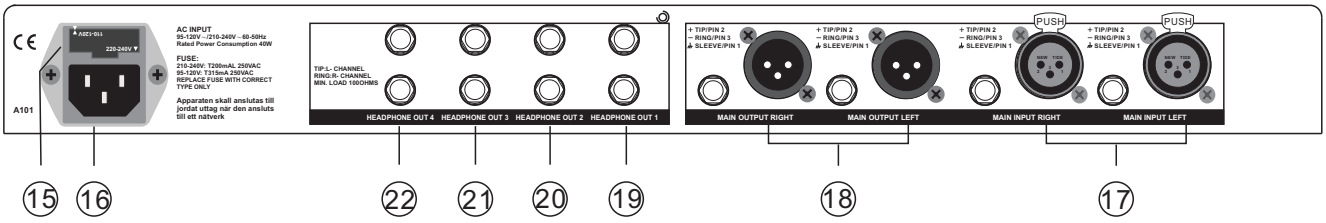
13. Bass Control

This knob is used to attenuate or boost the low frequency signal by 15dB.

14. Treble Control

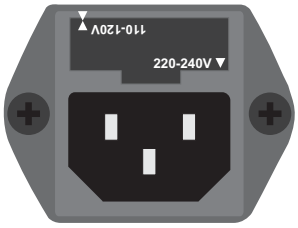
This knob is used to attenuate or boost the high frequency signal by15dB.

3.2 The Rear Panel

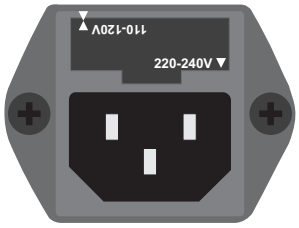


15. Fuse holder / Voltage selector

You must be sure of the Voltage available in your Country because this is a Dual Voltage Unit. Voltage operation can be changed through the fuse protecting the power supply but this operation must be performed by a qualified Engineer.



THIS IS SET FOR
110V AC TO 120V
AC OPERATION



THIS IS SET FOR
220V AC TO 240V
AC OPERATION

Please note the triangular markers on both sides of the fuse holder (See figure above), To change the voltage pull the fuse holder out, rotate it 180° and push it back again. The operating voltage will be that indicated by one of the two triangular markers.

16. AC Inlet

After the correct voltage has been set you can connect the AC plug to the unit and in the AC power socket.

17. Main Input Connectors

These connectors are used to input the stereo signal. You can input the main signal via the balanced 1/4" TRS phone jack or XLR connector.

18. Main Output Connectors

These connectors are used to output the stereo signal. You can output the main signal via the balanced 1/4" TRS phone jack or XLR connector. In some typical field, you can also use these connectors to interlink several Headphone Amplifiers for more groups monitor.

19. Headphone Out1

In Parallel with the Headphone Out on the front panel (for Channel 1), these are the headphone outputs of Channel 1.

20. Headphone Out2

In Parallel with the Headphone Out on the front panel (for Channel 2), these are the headphone outputs of Channel 2.

21. Headphone Out3

In Parallel with the Headphone Out on the front panel (for Channel 3), these are the headphone outputs of Channel 3.

22. Headphone Out4

In Parallel with the Headphone Out on the front panel (for Channel 4), these are the headphone outputs of Channel 4.

4. INSTALLATION & CONNECTION

4.1 Mains Connection

This is a dual voltage unit. Please ensure that the ▲LTO HPA4 4-Channel Headphone Amplifier is set to the correct supply voltage before plugging the power cord into the wall outlet, use the same fuse as marked on the fuse holder at the AC power connection socket.

Do not insert power cable into the unit until voltage has been correctly set. Do not plug the power cable into AC power until voltage has been correctly set.

The mains connection of the ▲LTO HPA4 4-Channel Headphone Amplifier is made by using the enclosed mains cable and a standard IEC receptacle. It meets all of the international safety certification requirements.

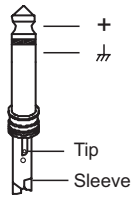
4.2 Audio connection

The HPA4 4-Channel Headphone Amplifier presents with balanced XLR connectors and 1/4" TRS phone jack and it can be interfaced by several ways to support a variety of applications without any signal loss.

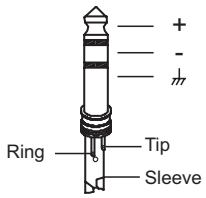
a. Wiring Configuration

Either the 1/4" TRS (Tip-Ring-Sleeve) phone jack or the XLR servo connector can be wired in balanced and unbalanced modes, which will be determined by the actual application status, Please wire your systems as the following examples:

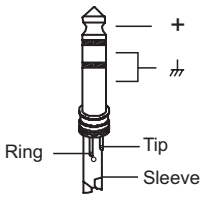
- For 1/4" Phone jack



TS Type Unbalanced

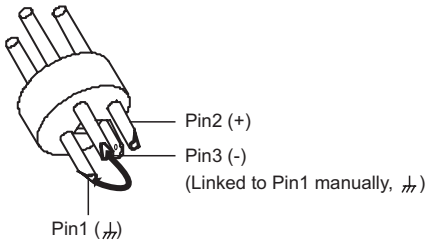


TRS Type Balanced

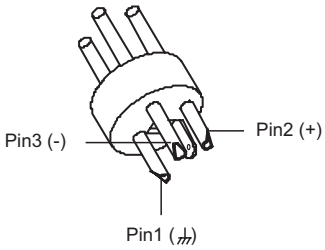


TRS Type Unbalanced

- For XLR connector



XLR Type Unbalanced

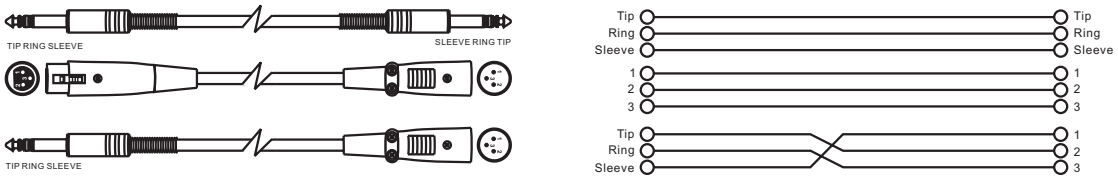


XLR Type Balanced

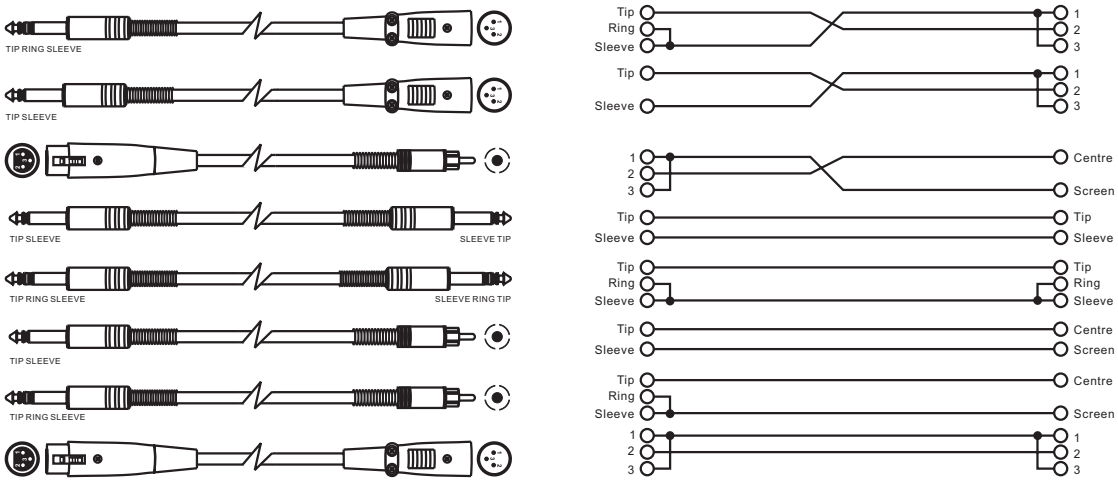
b. In Line Connection

For these applications, the HPA4 4-Channel Headphone Amplifier provides XLR connectors and 1/4" TRS phone jack to easily interface with most professional audio devices. Follow the configuration examples below for your particular connection.

• Balanced



• Unbalanced



4.3 Rack Mounting

The most secure mounting is on a universal rack shelf available from various rack manufactures or your music dealer. The HPA4 4-Channel Headphone Amplifier fits into one standard 19" rack unit of space. Please allow at least an additional 4" depth for the connectors on the rear panel. Be sure that there is enough air space around the unit for sufficient ventilation and please do not place the HPA4 4-Channel Headphone Amplifier on high temperature devices such as power amplifiers etc. to avoid overheating.

5. APPLICATION

This section introduces some typical applications of your ▲LTO HPA4 4-Channel Headphone Amplifier. Please reserve your time to well understand the control elements (see Chapter 3) and the following application examples, so as to be able to fully exploit the HPA4 4-Channel Headphone Amplifier.

5.1 Use the HPA4 as a Headphone Amplifier

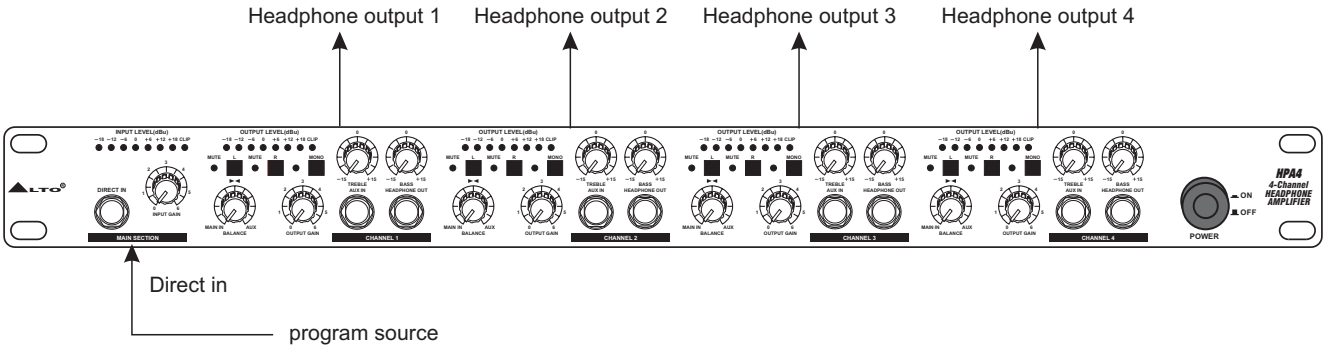
This is the basic application for HPA4 4-Channel Headphone Amplifier.

While using the HPA4 as a Headphone Amplifier, please apply the program source to Main / Direct In Inputs, and connect the headphone cable to one of the appropriate outputs. Ensure the Balanced Control adjusted to the complete counter-clockwise position, and turn up the Input Gain control. The Input Gain control is used to boost or attenuate the general volume of all the headphones, while the individual Output Gain controls are used to set the desired channel volume.

Three headphones can be connected per channel each time, but, please be sure that the resulted connection impedance must over 100ohms, otherwise, the output amplified signal may sound a little offensive, in terms of long time fault condition usage, the headphone amplifiers will be finally damaged or distorted.

If you still need further headphone ports or more groups headphone amplifier, please interlink any number of HPA4 via the Main outputs.

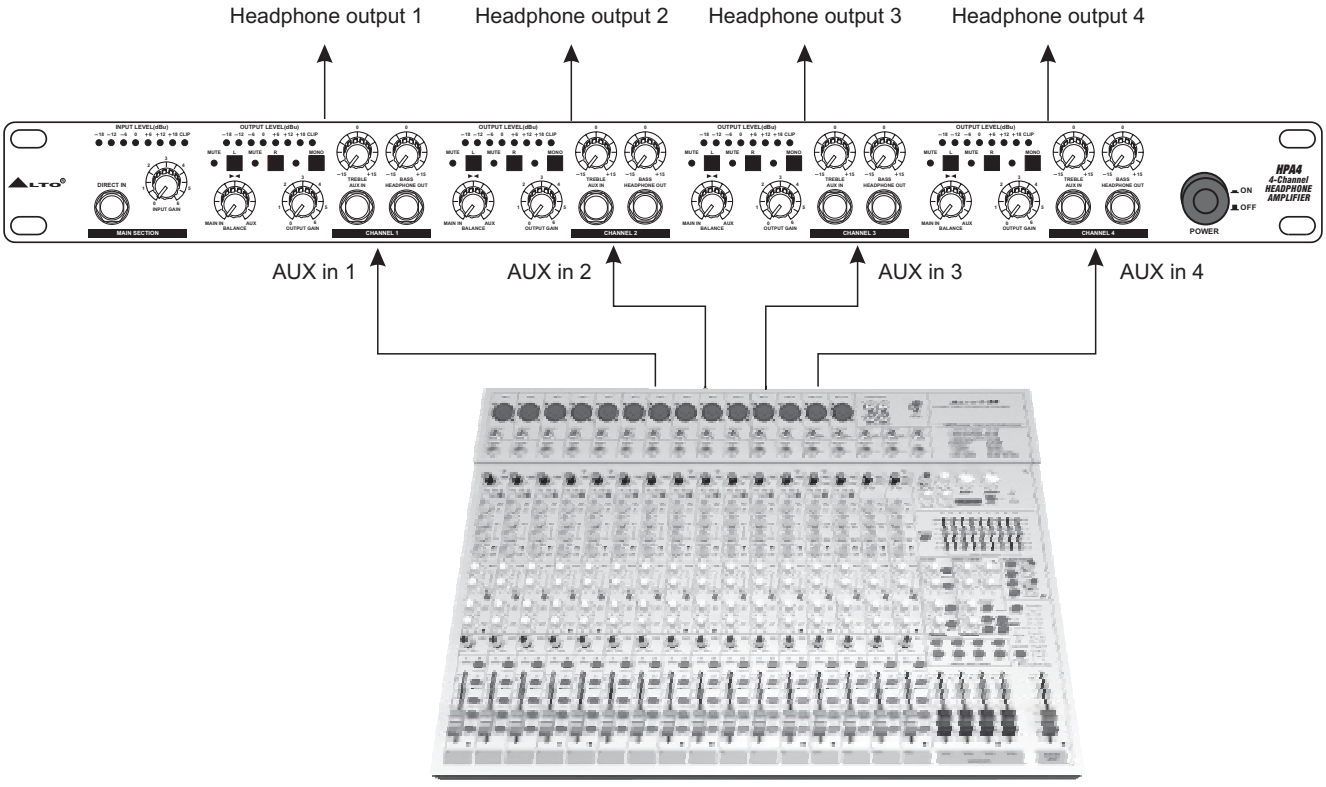
In parallel with the Headphone Output on the rear panel, the Headphone Output on the front panel is also used to output the signal of the individual channel, such function proves to be very useful esp. in the rack mounting application.



5.2 Use the HPA4 as Independent Power Amplifiers

Instead of using the HPA4 as the Headphone Amplifier, in many particular circumstances, it can also be conducted as the independent power amplifiers, as for this kind of application, please turn the Balanced Control to complete clockwise.

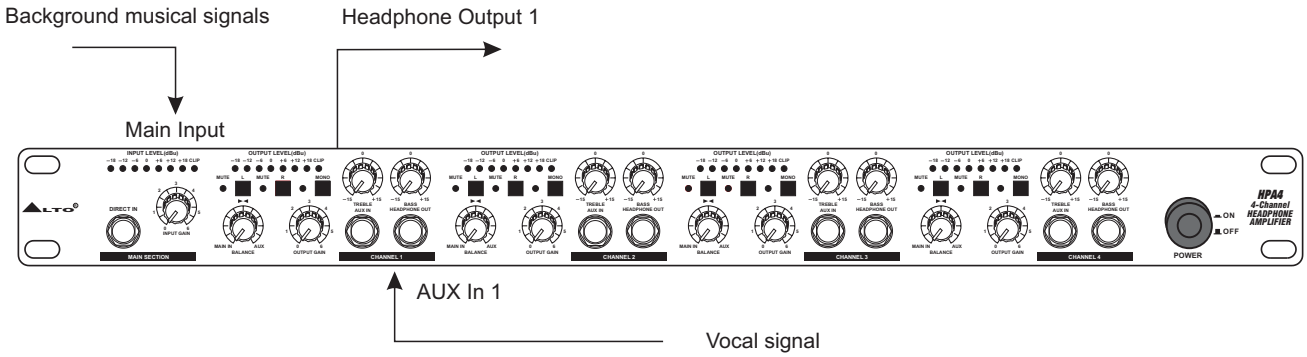
By setting the Balanced Control to AUX position, the Main signal will then be muted, only the signals coming from Aux In Input can be routed to the headphone amplifiers circuit. So, now, you can apply up to four independent stereo program sources to the mixing console, and consequently, four different and individual monitor facilities for up to four musicians can be created.



5.3 The HPA4 in Studio Application

Generally, the Aux In Inputs are used to feed a further input signal, which can be mixed with the Main/Direct In signal via Balanced Control, so that, well understood this function, you can get the wonderwork in the studio field.

Normal practice, if you want to record a vocal track which is intended to ride on an already existing background musical tracks, take it easy, just use the Main Input to feed the musical background signals, and input the Vocal signal through Aux In.



5.4 The HPA4 in Mono / Stereo Application

The HPA4 4-Channel Headphone Amplifier can be switched between the Mono and Stereo operational mode via Mode Switch control. Press the Mode Switch for Mono application, the Mono LED (8) lights up. In Mono application, the input two signals are combined together and the resulting mono signal routes to both the Left and Right Headphone Out Outputs.

6. TECHNICAL SPECIFICATIONS

AUDIO INPUT		
	MAIN input	
	Connectors	XLR and 1/4" jack
	Type	HF filtered, servo balanced input
	Impedance	40 kOhms balanced, 20 kOhms unbalanced
	Max.input level	+21 dBu balanced and unbalanced
	CMRR	typ.40 dB, >55 dB @ 1kHz
	AUX IN and DIRECT IN input	
	Connectors	1/4" TRS (tip=left, ring=right, sleeve=ground)
	Type	unbalanced
	Impedance	>15 kOhms unbalanced
	Max.input level	+21 dBu unbalanced
	CMRR	typ,40 dB, >55 dB @ 1 kHz
AUDIO OUTPUT		
	Connectors	XLR and 1/4" jack
	Type	balanced /unbalanced
	Impedance	dependent on the input impedance
	Max. output level	+21 dBu balanced and unbalanced
SYSTEM SPECIFICATIONS		
	Frequency response	10Hz to 50kHz,+/-3dB
	Noise	>90dB, unweighted, 22 Hz to 22kHz (>95dB @ +4dBu)
	THD	0.005% typ.@+4 dBu, 1kHz, Gain 1
POWER AMPLIFIER		
	Max.output power	+21dBm
	Min.output impedance	100Ohms
FUNCTION CONTROLS		
	Input level	variable
	Balanced per channel	mix between aux and main signal
	Output level per channel	variable
	Treble	+15/-15
	Bass	+15/-15
FUNCTION SWITCHES		
	Left mute	mutes the left signal of the respective channel
	Right mute	mutes the right signal of the respective channel
	Mode	switches channel to mono
INDICATORS		
	Input level	8-digit LED display: -18/-12/-6/0/+6/+12/ +18dBu/CLIP
	Output level	8-digit LED display: -18/-12/-6/0/+6/+12/ +18dBu/CLIP
POWER SUPPLY	Mains voltage	USA/Canada 120V～, 60Hz
		U.K./Australia 240V~, 50Hz
		Europe 230V~, 50Hz
		general export model 95-120V~, 210-240V~, 50-60Hz
	Power consumption	40 W
	Fuse	95-120V~: T315mA L/210-240V~: T200mA L
	Mains connection	standard IEC receptacle
PHYSICAL		
	Dimension	483(W)×217(D)×44(H)mm(19"×8.54"×1.7")
	Net weight	2.9kg(6.39lb)

7. WARRANTY

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to purport a more effective and efficient after-sales warranty service.

Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

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